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Sources of Ethnic Inequality in Vietnam

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To redress ethnic inequality in Vietnam, it is not enough to target poor areas. Policies must be designed to reach minority households in poor areas, to open up options by ensuring that minority groups are not disadvantaged (in labor markets, for example), to change the conditions that have caused their isolation and social exclusion, and to explicitly recognize behavior patterns (including compensating behavior) that have served the minorities well but intensify ethnic inequalities in the longer term.

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Summary findings

Vietnam's ethnic minorities, who tend to live mostly in remote rural areas, typically have lower living standards than the ethnic majority. How much is this because of differences in economic characteristics (such as education levels and land) rather than low returns to characteristics? Is there a self-reinforcing culture of poverty in the minority groups, reflecting patterns of past discrimination?

Van de Walle and Gunewardena find that differences in levels of living are due in part to the fact that the minorities live in less productive areas characterized by difficult terrain, poor infrastructure, less access to off-farm work and the market economy, and inferior access to education. Geographic disparities tend to persist because of immobility and regional differences in living standards. But the authors also find large differences within geographical areas even after controlling for household characteristics. They find differences in returns to productive characteristics to be the most important explanation for ethnic inequality.

But the minorities do not obtain lower returns to all characteristics. There is evidence of compensating behavior. For example, pure returns to location — even in remote, inhospitable areas — tend to be higher for minorities, though not high enough to overcome the large consumption difference with the majority.

The majority ethnic group's model of income generation is a poor guide on how to fight poverty among ethnic minority groups. Nor is it enough to target poor areas to redress ethnic inequality. Policies must be designed to reach minority households in poor areas and to explicitly recognize behavior patterns (including compensating behavior) that have served the minorities well in the short term but intensify ethnic inequalities in the longer term. It will be important to open up options for minority groups both by ensuring that they are not disadvantaged (in labor markets, for example), and by changing the conditions that have caused their isolation and social exclusion.

This paper — a product of Public Economics and Rural Development, Development Research Group — is part of a larger effort in the group to understand the determinants of poverty and the policy implications. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Dominique van de Walle may be contacted at dvandewalle@worldbank.org. March 2000. (31 pages)

Sources of Ethnic Inequality in Viet Nam

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1. Introduction

Viet Nam has a large population of ethnic minorities that tend to have appreciably higher concentrations of poverty than the country's Kinh majority.[1] The minority groups also tend to be more concentrated in upland and mountainous areas, often with worse access to public services and lacking basic infrastructure. In recent years, the government has targeted a number of rural development policies to poor areas in which ethnic minorities are found. Although there have been no rigorous evaluations, there is a seemingly widespread perception that such policies have been largely unsuccessful in raising levels of living of the minority groups.

In confronting this apparent failure, and noting frequent resistance to policy take up, the (largely Kinh) bureaucrats have tended to argue that the problem is the backwardness, ignorance, superstition or irrationality of the minorities (Jamieson 1996). For example, district health officials—puzzled by why ethnic minorities visit shamans instead of commune health care centers where they benefit from fee exemptions and free medicines—have attributed minority ill-health to "superstition and backwardness" (Mountain Rural Development Programme (MRDP) et al. 1999). An agricultural extension official quoted in Eklof (1995:5) explains "Those farmers who adopt a new technology are labeled progressive, those who don't are backward. But maybe the technology is not appropriate—still the extension workers will try to convince the "backward" farmer to adopt it."

A dissenting view argues that the policies have failed, and sometimes even further disadvantaged minorities, because they are premised on assumptions and models that simply do not apply to the circumstances of ethnic minorities (Jamieson 1996). In this interpretation, the minorities have over centuries developed complex farming systems and indigenous practices and knowledge that are well-adapted to their agro-economic environments. Culture, environment and identity are all strongly intermeshed. Piecemeal policy interventions that ignore the overall context are thus doomed to being rejected or to disappointing outcomes. When policies are additionally imbued with prejudice and majority group ethnocentrism they further result in a fraying of indigenous customs and identity, and can lead to greater marginalization.[2] Furthermore, since many of the policies are targeted to "ethnic minority

[1] There is considerable evidence to support this view. For example see Jamieson (1996), Ministry of Planning and Investment (MIP) (1996), Rambo (1997), Haughton and Haughton (1997), and Dollar and Glewwe (1998).

[2] Negative views of the minorities, including that they are poorer for "cultural" reasons, and will improve their situation only by being more like the Kinh, are not uncommon among Viet Nam's majority. Evans (1992) relates such attitudes on the part of Vietnamese anthropologists. Also see MIP (1996), Nakamura (1996) and Rambo (1997). Similar attitudes to China's minorities by China's Han ethnic majority are reported (Blum 1992; Gladney 1994).

areas," not minority households, benefits may well be captured by Kinh households living in these same areas.

Many interventions, from the education system to agricultural research and extension do appear to be premised on Kinh lowland agro-models and behavior, including cultural norms (Jamieson 1996, Rambo 1997, MRDP et al. 1999). For example, although members of some minority groups do not know the national language, government services and outreach are rarely in minority languages. Agricultural research and extension have not focused on crops and agro-economic systems prevalent in upland areas, but typically on wet rice cultivation and in recent years, cash crops. Few in the uplands have suitable land for the former while the latter bypasses poor minority households who tend to live far from main roads and markets, and do not have access to complimentary inputs. The education system follows a nationally set curricula that, it has been argued, is largely irrelevant to local realities and needs.

A central question in this debate is whether the same model generates incomes for majority and minority groups. This paper addresses that question and in doing so aims to better understand the causes of observed differences in living standards between the minority and majority ethnic groups in Viet Nam. We ask how important differences in economic characteristics—reflecting access to schooling, land, and other factors—are in explaining differences in welfare. Since Viet Nam's ethnic minorities frequently live in isolated, remote areas, a central question is also how important location is to levels of living. How much does where you live within the country shape the returns to your characteristics, and how does the answer depend on ethnicity?

It is possible however, that given equal productive endowments and location, the minorities receive lower returns as could arise from current or past discrimination. A structural difference in the models determining incomes would help explain the conflicts over policy noted above. The paper investigates the degree to which differences in living standards are attributable to disparate returns to household characteristics. In short, is it a common model but different endowments that create the income inequality between these groups—as is implicitly assumed in much current policy making—or are there deeper structural differences in the returns to endowments?

The paper also tests for signs of behaviors by ethnic minorities that compensate, at least partially, for differences in returns to productive factors. In poor, rural, largely subsistence agriculture economies, one would expect opportunities for discrimination against ethnic minorities to be greater in some activities—such as those involving interactions with the government or labor markets—than in others. If there is in fact discrimination, and it is not feasible to discriminate against all activities, one expects the minorities to develop comparative advantage, and possibly absolute advantage, in activities that can't be so easily discriminated against. Depending on what those activities are, this could in turn further reinforce ethnic differences in the longer-term.

One finds discussions of not dissimilar phenomena in the U.S. and European literatures on poverty and social exclusion, whereby a socially or economically excluded group retreats into patterns of behaviors, or survival strategies, that differ from those of the dominant group (for example, Loury 1999 and Silver 1994). Although welfare enhancing to the excluded group in the short run, it is believed that such behavior entails a "culture of poverty" that tends also to increase social differentiation and to reduce prospects for escaping poverty in the longer term. In Viet Nam, casual empiricism gives credence to the possibility of a similar process. The ethnic minorities are generally settled in more remote areas, and there is evidence that they engage in different production and land tenure practices and often specialize in the cultivation of non-traditional, and sometimes illegal, crops. Residential differentiation may well partly reflect historical minority preferences to live near ethnically similar households and to be represented by such households on local governing bodies. A push factor might also be present reflecting similar preferences among the majority.

These issues have bearing on appropriate policy responses to ethnic inequality. A common, and natural, policy response in settings such as this is to target extra resources to designated "minority areas." For example, Viet Nam's Commission for Ethnic Minorities and Mountain Areas (CEMMA) is entrusted, as its name suggests, with programs focusing on the country's minority groups, but also others living in mountainous areas. Its programs do not make much of a distinction between the Kinh majority and the ethnic minority households living within mountainous "minority areas."[3]

If the main source of ethnic disparities in levels of living is indeed geographic, and intra-area disparities are a secondary issue, then current interventions targeting poor areas with high concentrations of minorities can be expected to work well. If instead we find substantial intra-area disparities, the issue then arises as to how much they reflect differences in readily observable economic characteristics such as schooling, versus differences in returns to the same characteristics. Do differences in living standards persist once we control for geographic fixed effects and household characteristics? What evidence is there for differentiated behavioral patterns between the minority and majority groups? The answers can help guide the current policy debate about how to redress welfare differentials between the ethnic minorities and less disadvantaged groups in Viet Nam.

The paper begins with a review of past approaches to the economic analysis of ethnic disparities, and how the paper's methods differ. Section 3 describes the household-level data set used for the analysis. The paper then explores the determinants of living standards and how they differ between the groups. Section 4 describes the econometric specification, while sections 5 and 6 discuss the results. A final section summarizes the paper's conclusions.

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[3] A similar policy operates in China's ethnic areas just across the border from Viet Nam, and there too the policy does not appear to be targeted within the declared "minority villages."

2. Framework of Analysis

Investigations of ethnic disparities in living standards in developing countries often rely on descriptive decompositions of aggregate poverty and/or inequality between ethnic groups. There is a literature that focuses on the contribution of ethnic disparities to overall measures of inequality (Anand 1983 and Glewwe 1988). One may of course be concerned about ethnic inequalities in living standards quite independently of their bearing on overall income inequality. Ethnic inequality may well be of concern because of the implications for social functioning and the nature of economic development more broadly. In this paper we take as our starting point that ethnic disparities are important, and focus instead on the causes of those disparities.

There have been attempts at identifying ethnic discrimination through analysis of wage earnings disparities (for example, Psacharopoulos and Patrinos 1994). This draws on a standard technique in the labor economics literature, known as the Blinder-Oaxaca decomposition (Blinder 1973 and Oaxaca 1973). Group-specific earnings functions are estimated and the parameters used to decompose the mean inter-group wage differential into that which is attributable to differences in productive characteristics and that which may be attributable to differences in returns to characteristics, as might arise from discrimination.

To see how this approach works, let the reduced-form model for the log of earnings (W_{ij}) for the i^{th} individual in the j^{th} group be written as:

$$(1) \qquad \ln W_{ij} = X_{ij}\beta_j + e_{ij},$$

where X_{ij} represents a vector of individual characteristics such as education and work experience, with corresponding parameters β_j, while e_{ij} is a zero mean error term that is assumed to be uncorrelated with X_{ij}. Since the fitted regression passes through the means, this can be rewritten in a form that decomposes the mean wage differentials between the groups as follows:

$$(2) \qquad \ln W^*_m - \ln W^*_e = \beta_m(X^*_m - X^*_e) + X^*_e(\beta_m - \beta_e),$$

[Total difference] [Characteristics] [Structure]

where the $\ln W^*$s and X^*s represent the predicted mean (log) earnings and the mean characteristics of the respective majority (m) and ethnic minority (e) groups. The first right-hand-side component in (2) is the earnings differential attributable to differences in the

observed characteristics of the groups, in this case weighted by the parameters estimated for the majority.[4] The second component is that attributable to between-group differences in the returns to given individual characteristics. The labor economics literature refers to the second component as the difference due to "structure."

One obvious drawback of the above approach in many developing country settings is that it is limited to the wage labor market. This is not very satisfactory when self-employment in the agricultural or informal sectors is the source of livelihood for most households, and arguably even more so for disadvantaged ethnic groups. Past analyses of ethnic disparities in developing countries have therefore tended to be limited to the minority of urban formal sector employees.

A second issue on which others have also remarked, concerns the conventional method's implicit definition of discrimination as lower returns for identical productive characteristics (for example, Gunderson 1989). Clearly, differences in mean characteristics between groups can themselves be the product of past unequal treatment and disadvantage. For example, prior discrimination may have meant no access to credit or being pushed into geographical areas of low natural potential. Such treatment will have lowered the returns to given characteristics but also resulted in poorer productive characteristics. This doesn't invalidate the Blinder-Oaxaca decomposition, but it does have bearing on its interpretation.

These are compelling concerns in a low income transitional economy such as Viet Nam. Markets are thin and mobility is limited. In this environment it is even harder to believe that people have themselves chosen their characteristics. If a specific ethnic group was forced at some time in the past into adopting a specific set of low return characteristics—such as living in mountainous areas—then the definition of discrimination in terms of lower returns to the same characteristics is clearly problematic. (This need not mean that those same characteristics are endogenous to current living standards; the deviations from mean characteristics within the ethnic group can still be orthogonal to the error term.)

The standard method for analyzing wage differentials does not identify an explicit role for geography. There are two reasons why one should allow for geographic effects. The first is that in this economy one important characteristic determining living standards is where you live. Mobility has been considerably limited in recent decades. Apart from government resettlement programs to new economic zones, during the 1980s mobility was tightly controlled through a system of residence permits, which were necessary to obtain subsidized essential goods (United Nations Development Programme (UNDP) 1998). Reforms introduced at the end of 1986 largely removed the subsidies but severe institutional constraints continued to impede migration. Access to government services and participation in private transactions to do with land, housing and credit are still firmly linked to the system of

[4] Note that since the discrimination free wage structure is not known, choice of the reference group is arbitrary.

residence permits (UNDP 1998). Temporary migration of individuals to urban areas has risen but the movement of entire rural households to other rural areas was still relatively rare in the early 1990s. So it can be argued that this is a setting in which location is likely to be a causal determinant of levels of living.

For similar areas in neighboring Southwest China, there is also evidence of significant geographic externalities that suggest that households with identical characteristics would have different rates of consumption growth depending on where they live (Jalan and Ravallion 1998).[5] In this context, a possible explanation for ethnic differences in living standards is differences in location of the groups and nothing to do with discrimination within a geographical area.

A second reason to allow for geographical effects is that omitting them could severely bias estimates of the returns to non-geographic characteristics. In this setting, a potentially serious source of bias is likely to be geographic heterogeneity in the quality of (for example) land and education. It can be argued that a good deal of the latent quality differences that one expects to matter to living standards are going to be geographically correlated—to vary more between, than within communes in Viet Nam. This is obvious for land, but may well be no less important for education, given decentralization and a high degree of self-financing at local (commune) level of teachers, school materials and supplies. By introducing geographic effects, one has a better chance of more accurately estimating the returns to the observed characteristics.

Motivated by these concerns, we will depart from the standard approach to analyzing ethnic inequality in certain ways. Given that labor markets are so thin in rural north Viet Nam, instead of examining wages, we focus on a broader measure of individual living standards, or welfare, and conduct the analysis at the more appropriate level of the household. We ask whether there are ethnic differences in living standards controlling for household characteristics, and allowing for geographic effects. Only in the (and, as we have argued, implausible) special case in which the geographic effects are uncorrelated with the economic characteristics of households will such a specification give the same results as the standard specification of (1) in which e is treated as a zero mean white noise error term.

We will not, however, interpret the structure component as current "discrimination." Such an interpretation is also questionable when one thinks of the likely dynamics of the income generation process. Structural differences may exist in the absence of current discrimination, due, for instance, to a history of past group disadvantage with a continuing legacy for the returns to economic characteristics. Longstanding differences in group behavior will be embodied in the model parameters for current levels of living. These issues are clearly more relevant to examining living standards than wages, where the market mechanism pushes

[5] Strong geographic effects on living standards are also found in countries with few obvious restrictions on geographic mobility; see Nord (1998) for the United States and Ravallion and Wodon (1999) for Bangladesh.

towards similar returns to productive characteristics. No such mechanism applies to a broader income concept in settings with little or no mobility. So, quite apart from issues of discrimination, understanding how much disparities are due to structure versus different characteristics remains key to explaining the causes of inequality and designing appropriate policy. Again, the decomposition remains useful, but its interpretation is different to that in the literature on wage discrimination.

3. Data

To investigate the situation of ethnic minorities in Viet Nam, the study uses the 1992–93 Viet Nam Living Standards Measurement Survey (VNLSS), a nationally representative, integrated household survey based on sound sampling methods and geared to minimizing non-sampling errors. The survey was implemented by the Government Statistical Office with donor funding and technical support. Though administered to each household during only two visits, two weeks apart, the VNLSS allows for data entry to be done in the field and performs range and consistency checks so that any discrepancies can be checked and corrected by re-interviewing the household. It asks detailed questions on many aspects of living standards including household and individual socio-economic characteristics, consumption expenditures, incomes and production. We limit our sample to the 2,720 rural households sampled in what we loosely call northern Viet Nam, comprising provinces in the Northern Uplands, North Coast, Red River, the Central Coast and the Central Highlands. The last is usually considered part of South Viet Nam but since it is a mountainous, border area with a historically high concentration of minority population we include it in the analysis. Households of Chinese origin tend to be relatively well-off in Viet Nam and, since our objective is to investigate the determinants of the living standards of relatively under-privileged groups, we lump them together with the majority Kinh population. This gives us a sample of 2,254 majority households (Kinh and Chinese) and 466 ethnic minority households living in 85 communes.[6]

The study's geographical coverage reflects a number of important considerations. Our aim is to ensure sufficient variation across minority and majority populations and to cover areas where ethnic minorities reside. A further reason for excluding the Mekong Delta and South East regions is that the rural economy appears to function quite differently there. For historical reasons, these areas had more developed land and labor markets in 1992–93 than did the rest of Viet Nam.

We use household per capita expenditures as our indicator of welfare. There are compelling arguments for using expenditures instead of income to measure well-being.

[6] There are 54 ethnic groups in Viet Nam of which the majority Kinh comprise 81.2 percent of the population. Six of the largest minority groups are represented in our data: the Thai, Tay, Muong, Khome, Nung, and H'mong.

Consumption can to some extent be smoothed against income fluctuations. There are also serious concerns about income measurement errors in this context. As Rambo (1997) writes:

> Perhaps because many of the commodities being exchanged are illegal (opium, medicinal plants traded to China) or do not fall within the standard categories used for economic data collection (minor forest products), the real extent to which the mountain minorities are already deeply involved in the market nexus is not fully recognized. Rambo (1997: 25).

The existence of illegal income sources could severely bias income-based measures of ethnic inequality, but is less likely to matter to consumption based measures. The survey focuses effort on carefully collecting consumption expenditures. In addition, expenditures typically provide a better indicator of the current standard of living in poor agricultural economies. They are deflated by region specific poverty lines to deal with spatial cost-of-living differentials. Monetary amounts are in Vietnamese Dong.

The unconditional means from our data help establish that the minorities do indeed have lower standards of living on average than the majority. Table 1 gives descriptive statistics for the two groups in our sample and indicates a mean per capita household expenditure for the minority groups of just under three quarters the average for the majority. The incidence of poverty is calculated to be 60 percent for the Kinh and Chinese and 80 percent for the minorities.[7] Figure 1 plots the poverty incidence curves giving the cumulative distribution functions of per capita expenditures for every possible poverty line. It shows the disparity in living standards more starkly and indicates first order dominance. The result that poverty incidence is higher among minority households is also robust to different equivalent scales.[8] Non-income indicators of poverty in Table 1 show the same pattern. Education attainments are clearly lower on average for the minorities. A much higher proportion belong to illiterate households (12 versus 3 percent). For 27 percent of the minority but only 12 percent of the majority households, the most educated member had primary education, while 53 percent of the latter had a member who attended high school compared to only 31 percent of minority households.

Given our interest in the role of geographical disparities, it is also useful to examine how community endowments vary across the groups. Table 2 presents means over both groups on whether certain attributes, facilities, and services are found in a household's

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[7] For details on the poverty lines see Dollar and Glewwe 1998. When we use a lower cutoff point of two-thirds of the poverty line the prevalence drops to 24 percent for the majority group and 45 percent for the ethnic minorities.

[8] We treated the original per capita poverty line (z) as the per capita expenditure needed to escape poverty at average household size. So, the poverty line per equivalent single person is $z\ \bar{n} / \bar{n}^{\theta}$ where $\bar{n}$ is average household size and θ is the size elasticity. At any given θ—tested from 0 to 1 at intervals of 0.1—the poverty ranking does not change.

commune of residence as well as mean distances from the commune center to the closest facilities. Access to infrastructural facilities and services tends to be worse for the minorities. For example, they are much less likely to live in a commune with a permanent (as opposed to a periodic) market, a radio station, a health care center and a lower secondary school. Of course, these data tell us nothing about the quality of the facilities, which could well also vary across communes. Distances to the closest facility are also generally larger, with larger variance across communes. Interestingly, the variance in community characteristics across geographical areas tends almost always to be larger for minority households. Finally, the two indicators of non-farm employment opportunities—whether unskilled labor work is available and whether there is a large commercial enterprise in the commune—are both more frequent in communes where majority households reside.

A look at household income sources further indicates less diversified livelihoods for the minorities. Among minority households all but 26 percent (standard deviation of 2 percent) derive their incomes solely from own-account farming activities, while 56 percent (standard deviation of 1 percent) of majority households have non-farm incomes sources. The ethnic majority more often combine farming with self-employment in non-farm enterprises or wage-employment.

4. Econometric Specification

Following the discussion in section 2, household welfare is assumed to be a function of household and community level endowments and other attributes. To explore the determinants of welfare we regress the log of per capita expenditures (W_{ijk}) for the i'th household in minority or majority group j living in commune k, against household characteristics (X_{ijk}) and geographic effects (η_{ij}):

$$\ln W_{ijk} = \beta_j X_{ijk} + \eta_{ij} + \varepsilon_{ijk} \quad (3)$$

where ε_{ijk} is a random error term, orthogonal to the explanatory variables.

Household characteristics include demographics: proportions of children in the 0 to 6 and 7 to 16 year brackets, proportions of male and female adults, and a series of dummy variables describing whether household structure consists of a single individual, a couple, a couple with one, two, or three or more children, a three generation household, or some "other" composition. A few variables are specific to the head of household: age and age squared, and

gender. We also include a dummy variable for whether the household receives remittances from relatives abroad.[9]

Household human capital is measured as a series of dummy variables for the highest education level of the member who has completed the most formal schooling. For example, if the most educated member attended middle school, that dummy has a value of one while all the others are zero. This specification allows us to measure the incremental returns to extra years or levels of education. Education is assumed to be pre-determined to current consumption. However, there could still be omitted variable bias. For example, one likely omitted variable is the quality of education. Disparate returns to schooling across the groups could be picking up either a difference in the returns to quality, or a dissimilarity in how differences in quality affect the quantity of schooling. We return to this point below.

We also include as explanatory variables the total area of different types of land cultivated by the household in the last 12 months. Land is disaggregated into area of irrigated and non-irrigated annual crop land, perennial crop land, forest, water surface (most often used for the culture of fish), and other land (consisting of vacant lots, bald hills, burnt and fallow land, river banks, road and dike sides).[10] To measure land quality we enter the shares of total irrigated and non-irrigated land recorded in the survey as locally rated of good quality. Land markets did not exist at the time of data collection. But even though households did not flexibly and freely choose land, the possibility of endogeneity can not be fully dismissed here either. Within communes, land allocations were made by local administrations. Original household allocations of annual crop land often date back to 1988 and were usually made on a per labor unit basis and allowing for quality differentials and water access. Other land types (perennial, forest and other land) were distributed as late as 1991 or later, and appear to have frequently been subject to greater local discretion.[11] For example, Donovan et al. (1997) report great variation in how the national land tenure regulations have been applied in the country's northern regions. They found that common criteria for distributing forest and other land included evidence of sufficient household labor, capital, and ability to make investments. They also describe numerous instances of apparent favoritism in forest and other land allocation, with outcomes commonly favoring privileged village households.

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[9] Note that, in as much as it is a dummy variable, it is not affected by differences in levels of remittances among recipients. While there may nonetheless be endogeneity concerns about this variable, we believe it would be worse to exclude it. The dummy could well proxy for important unobserved factors that affect consumption, such as the household's connections and political clout in the commune and at higher levels of government.

[10] Any swidden land that was cultivated during the last year is included in annual crop land. Swidden land is more commonly cultivated by the minorities. Unfortunately, the survey does not collect information on area of swidden land left fallow in the last year but available to the household.

[11] For example, see the commune case studies reported in Donovan et al. (1997, vol 2). Also see Jamieson (1996).

The process of local land allocation suggests possible endogeneity, whereby some land assets are a function of latent factors such as local political influence or access to capital that also influence consumption but are not in the regression. The land coefficients then reflect both the returns to land and to those omitted variables. We will return to this point when discussing the interpretation of our results.

Finally, we include dummy variables for the commune in which the household lives. As emphasized in section 2, in this particular setting it can be argued that location is largely exogenous and has a direct causal effect on living standards. Allowing for commune fixed effects also helps deal with potential bias in other parameters of interest. As also discussed in section 2, latent factors that may be correlated to included variables, and directly influence the dependent variable, are likely to be geographically correlated. Communes are relatively small and the commune effects should adequately capture differences in inter-commune quality of land and education attributes, local infrastructural development, geo-environmental attributes, prices, and other community level factors. This should help deal with possible endogeneity of the included variables—notably land and education. There may of course still be some bias due to intra-commune differences in omitted variables—including possible factors influencing within commune land allocations as noted above—but we can do nothing about this.

We run two sets of regressions. The first includes household level characteristics excluding location. Since differences in the returns to those characteristics may well reflect where one lives, we then run the regressions with commune fixed effects and test for the influence of locational factors on the returns to household characteristics. In all regressions, we estimate the standard errors using the Huber-White correction for heteroscedasticity and we correct for the non-zero covariance within communes due to sample design (using the robust cluster option in STATA 6).

5. Discussion of Results

Table 3 presents the regression results for the majority and minority groups. Chow tests on these regressions reject the null hypothesis that the parameters are the same for the two groups ($F= 4.64$ (34, 84)) when geographical fixed effects are excluded. Testing the joint restrictions is trickier when controlling for fixed effects since the number of variables is now different in the two regressions as a result of both groups not being found in all communes. Chow tests on regressions limited to the sample of 704 households—366 majority and 338 minority—residing in common communes also convincingly rejects identical parameters both without and with fixed effects.[12]

[12] This is true using ordinary robust and robust cluster standard errors. However, on the model estimated with the latter, we can only test up to 21 constraints at a time (equal to the number of clusters minus one).

Subtracting the minority from the majority regression (both with commune effects) tells us about the contribution to ethnic inequality of a change in specific household attributes, controlling for commune of residence. The constant term—combining the joint effects of the excluded dummy variables—contributes positively to inequality between the groups, as do the education variables, the receipt of remittances dummy, household size, the household composition variables, the share of good quality irrigated land and forest land. Other types of land, a male household head and household structures other than the left-out "couple," reduce inequality. The following discussion goes into more detail.

Demographic effects. Although on balance the size of the demographic variable parameters favors the majority group, demographic effects are similar across the groups and regressions with and without fixed effects. Household size has a strong negative impact on welfare. Compared with the omitted share of members aged under six, higher shares of all other members have significant positive impacts on living standards. The household structure variables have no apparent explanatory power with the exception of the negative effect of being a one child couple compared to a couple alone for the majority when we control for location.

Returns to education. Striking differences arise in the education parameter estimates. They are consistently positive and significant for both groups but the returns to education are substantially *higher* for the minority in the regression not allowing for geographic effects. An increment to per capita consumption expenditures of 75 percent of original consumption is indicated as a result of the most educated member completing primary schooling. The cumulative impact of completing middle school is to raise per capita consumption by 84 percent, and of high school to more than double it. By contrast, returns for the majority are respectively: 22, 34 and 49 percent over original consumption per person. The cumulative advantages of education to the ethnic minorities are maintained through vocational or university education though the returns are diminishing the higher the education level. Looking at the non-fixed effects regression results, one might feel justified in concluding that as education expands, this will in itself reduce and eliminate ethnic inequality, obviating any need to target.

However, given the impediments to migration, a generalized policy of education expansion is not the solution. Education is closely linked with where a minority household resides, so that once one introduces the geographic effects, the results change dramatically: differences in the returns to education between ethnic groups are reversed. Although impacts on minority living standards remain positive and significant, their magnitude declines to the point of being lower than those estimated for the majority for all but primary schooling.[13] By

[13] We cannot reject the null that the education coefficients are the same when tested on the smaller sample of communes where both groups live. Although the returns are higher for the majority with fixed effects for all except primary, collinearity between education and other regressors is no doubt raising the standard errors.

contrast, the majority parameter estimates are much less affected by omitting the geographic effects. This is shown in figure 2 which plots the cumulative returns to education relative to being illiterate for both groups with and without the fixed effects. Note that the figure shows the proportionate gains to consumption. Since the proportionate gains (with fixed effects) are higher for the majority, and they are also on average richer, the level consumption gains from education must be even higher for the majority.

In other words, we find that the differences in returns are strongly associated with where a minority household lives. There are large unconditional returns to schooling to minorities, but the difference upends when comparing ethnic minority and non-minority households in the same place. The ethnic differences in unconditional returns thus arise from the geographic distribution of ethnic groups such that the real difference between high education, high consumption minority households and those with low education and low consumption is in where they live. Under-developed labor markets and considerable immobility allow this to happen.

These results suggest a substantial bias in the estimated returns to schooling for the minorities when not controlling for commune effects. The key omitted characteristic is likely to be the quality of education, which is itself determined geographically for the minority group. Our results are consistent with a situation in which the places where living standards are higher for the minority are places where education quality tends to be better, and the latent quality differences are positively correlated with quantities of education.[14] However, we do not find a similar bias for the majority (noting that the regressions with and without fixed effects are similar for the majority). Either there are few quality differences for the majority, or the differences are uncorrelated with differences in observed quantities. We cannot say which it is.

The seemingly high returns to minority education suggested by the model without commune effects appear to be due not to education but to the combined effect of restrictions on migration and geographical differences in the provision of education services. These have simultaneously created large intra-commune differences in consumption and education levels for the minorities. This results in high estimated returns to education (without fixed effects), and suggests potentially large returns to minority migration. The fact that this does not happen for majority households (whose mobility is also restricted) suggests that the provision of education has been more equitable across majority areas. [15]

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[14] Notice that both conditions are required. The omitted variable bias is the coefficient of the omitted variable in the main regression times the regression coefficient of the excluded variable on the included variable.

[15] When we drop the dummy for household receives income from relatives abroad, the results are almost identical, though with slightly higher returns to education for both groups. This is consistent with it proxying for omitted indicators of, for example, political importance in the community. Leaving it in is likely to give better estimates of the returns to education. The dummy is non-zero for only 3 percent of majority and 1 percent of minority households. (Details available from the authors.)

Returns to land. Joint significance tests of the linear and quadratic terms shows that perennial, water surface, and irrigated land are significant at the 5 percent level in all regressions, except for irrigated land in the minority without fixed effects, where it is significant at the 10 percent level. Non-irrigated land has little explanatory power in any regressions. Other land is significant (5 percent level) in both majority regressions, and in the minority fixed effects at the 10 percent level. In addition, the forest land variables are significant in the majority fixed effects (5 percent).

To see how the returns to land assets vary across the groups we create figure 3, which (analogously to figure 2 for education) plots proportionate consumption gains for different amounts of land relative to having no land. To deal with the different land types, we create a land bundle (identical for both groups) combining the relativities of all land types at the mean. This bundle therefore contains a fixed share of (good and bad quality) irrigated and non-irrigated land, and other land types and is expressed in different total amounts. Thus, using the parameter estimates for each group, we plot the group-specific proportionate consumption gains from different quantities of land, holding quality constant.[16]

The regression without geographic effects gives implausible results: returns to land for the majority are actually negative. For both groups returns appear to be underestimated. These results are consistent with the land parameters in the regressions without fixed effects picking up the effects of omitted cross-commune quality of land variations that one would expect to be negatively correlated with quantities of land. If high quality is associated with lower quantities of land across locations, then returns to land will be underestimated unless one controls for commune effects. We also find that the marginal returns to aggregate land are higher for the ethnic minority groups, especially controlling for where they live.[17] Analogously to figure 2, we note that the differences in the gains to levels of consumption will be lower than the plotted proportionate gains since the minority group is poorer. However, the gains in levels are still larger than for the majority group given that the proportionate difference in returns to land (with fixed effects) is so much larger than the proportionate difference in consumption.

The minorities obtain higher increments to consumption from extra land ceteris paribus (figure 3). This is the opposite of what we would expect if there was a bias due to endogeneity of administrative land allocation, as discussed in section 4. A priori, one expects omitted attributes such as access to credit or political clout to be more strongly correlated with land allocation for the majority group. When we examine individual land types, we find

[16] At zero land, per capita consumption of the groups will differ. The graph should not be interpreted as saying that the minorities have higher consumption at any given amount of land.

[17] We tested the results by running a number of alternative specifications including one with total land, total land squared and shares of each type of land making up the total to take into account land type and quality. The pattern evidenced in figure 3 is closely repeated each time. We therefore stayed with our functional form as it is more flexible, and hence econometrically preferred, than the alternatives.

similar patterns for all but forest land, where returns favor the majority. The available evidence points to the allocation of forest land being more subject to idiosyncratic household characteristics than other land types (Donovan et al. 1997). The returns to forest land may reflect an over-estimation of the coefficients due to latent omitted variables. But this cannot explain our results for aggregate land.

Clearly, there must be one or more inputs that ethnic minority households are supplying in greater quantity so as to obtain a larger output from the same land. What could that be? The available evidence makes it implausible that the minority households are less credit constrained at any given amount of land and generally have access to more productive inputs such as machinery or extension services than the majority.[18] One interpretation for these findings is that minority households are working harder on their own land to compensate for their lack of off-farm opportunities. In general, minority households have lower levels of education, larger size, fewer children in school, fewer outside non-farm economic opportunities, and face an even thinner labor market than others given where they live. They then have little choice but to work harder on their land.[19] Mean hours worked on one's own household farm from the survey data provide strong corroboration for this interpretation. Converting yearly hours worked per household into eight hour day equivalents gives a mean of 397 days across the majority households versus 697 days for minority households.[20] Unfortunately we are unable to express time worked per land area since the survey provides no information on labor time by land type. Instead, we run a regression of the log of total hours worked on one's farm for the entire sample against land variables (including squared terms and the land quality variables) and a dummy taking the value one if the household is minority and zero otherwise. The estimated coefficient is 0.45 (t=4.75). This suggests close to 50 percent higher labor time for minority households at given amounts and quality of land.[21]

A likely contributory factor is that the minorities as a whole are more adept at exploiting high-return, non-traditional, agricultural and forest products. This is likely to require an intimate knowledge of the ecosystem, inputs and how remunerative certain non-traditional

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[18] Lower access is documented in, for example, MRDP et al. 1999, and Jamieson, 1996.

[19] There is a possible alternative explanation for the higher returns to land for the minorities. As mentioned, more among the minority cultivate swidden land. If they also generate income from the unobserved swidden land left fallow, then the results could reflect omitted variable bias. However, the direction of the bias will depend on whether the area of fallow swidden land is positively or negatively correlated with currently cultivated land area. A positive correlation would result in an overestimation of the returns to land and could explain our results, while a negative correlation would underestimate returns. We think it unlikely that a positive correlation is a general tendency

[20] Minority male adults work the equivalent of 271 eight hour days; female adults 293; and children 133. For the majority household members the averages are: 145, 188, and 65, respectively.

[21] We tested a number of alternative specifications (without the squared land terms; including all other household characteristics; including commune dummies; limiting the sample to households in communes where both groups live). Without exception, we get strong positive and significant effects of minority household status on hours of farm work.

and sometimes illegal products are. Minorities have often lived in the same areas for generations. Their long confinement in these areas has no doubt fostered a lot of specialized agro-environmental knowledge that helps to optimize land use and maximize output. These effects are likely to be reinforced by the minority group's lack of more traditional alternatives, and their greater inaccessibility and distance from public interest and policing.

Thus it can be argued that the forces that led to the high concentrations of minorities in upland and mountainous areas may well have the effect that the marginal returns to land are actually higher for them. In this case, as a result of the poorer ethnic group experiencing lower access to off-farm work, reduced access to good quality flat land and complementary inputs such as capital, it compensates in ways that result in higher returns to land. Nonetheless, despite the minorities' additional efforts and specialized knowledge, their consumption remains lower.[22]

Returns to location. A similar comparison can be made of the estimated commune effects (the η's in equation (3)), but only for the regression run on the sample of communes that are home to households from both groups.[23] Figure 4 plots the commune coefficients estimated for the majority against those estimated for the minority group. With very few exceptions, returns to a specific geographic location are higher for the minorities. In a way similar to what we found for land, the minorities appear to be specializing and drawing greater advantage from location attributes. As a result they achieve higher returns, including compared to the majority living in the same places. This partly, though only partly, compensates for lower consumption.

Summarizing the regressions. We find that excluding location results in severe omitted variable bias. This reflects the fact that non-geographic variables tend to be geographically correlated. Geography also independently affects living standards as indicated by significant commune fixed effects.

We also find that where you live matters much more to the ethnic minorities' living standards than to the majority's. Living in a bad area tends to inhibit their characteristics more severely. As noted in section 3, greater geographic variance exists among minority households. Because omitted geographic variables for the minorities tend to be more positively correlated with desirable household characteristics, omitting the fixed effects produces results that tend to overestimate the returns to desirable household characteristics.

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[22] An implication of the findings is that there are land transfers from majority to minority that would raise average consumption over both groups, and enhance both efficiency and equity. Such trades are not occurring given non-existent land markets. The administrative land allocation appears to be creating efficiency losses. The situation is akin to the classic case of inequality impeding growth whereby the poor have higher marginal returns because they can't get inputs such as credit (Binswanger et al. 1995).

[23] The coefficients are estimated relative to a left out commune, and so change according to the omitted communes.

Land is to some degree offsetting because of its response to added effort and input by minority households making up for their lack of outside income earning opportunities in certain areas. There is also evidence of compensating effects of location. A component of consumption is due purely to where a household resides. Average consumption is lower for the minority groups but absolutely more of that consumption is due to where they live.

Comparing well and poorly-endowed areas where minorities live, we see larger differences in educational attainments, land assets, household size, and other attributes than are spatially evident among the majority. This suggests that at least some part of the structural difference in living standards is geographic, taking the form, for example, of a minimum level of public spending to areas where minorities are concentrated, affecting the quality of education and other infrastructure, accessibility to services and information, and off-farm income-earning opportunities. Such attributes tend to reinforce differences due to characteristics. In contrast, controlling for characteristics, where the majority live matters less to their consumption levels.

6. Aggregate Differences in Returns

As we have seen, there are both positive and negative compensating influences on ethnic inequality emanating from differences in the returns to the same characteristics. We now ask how much, in aggregate, differences in returns account for differences in living standards. We decompose the between group difference in log per capita consumption expenditures using the methods discussed in section 2. We use alternatively the majority and minority parameters as reference weights. The decomposition is undefined for the full sample with commune fixed effects because of the missing parameter when only one group is present in the sample for a commune.[24] For this reason we also do the decomposition for the sample limited to households living in communes where both minority and majority are found. This allows the decomposition to also be done with the fixed effects model. Restricting the sample this way also allows us to test for the possibility that differences in characteristics across the full sample reflect in part differences among the majority households across communes in which very few minority households are found. Table 4 presents the results.

For the whole sample, we find that the difference in log consumption per capita between the majority and minority groups is almost equally explained by differences in characteristics (52 percent) and differences in the returns to those characteristics (48 percent). The component due to characteristics increases slightly when we use the minority parameter weights instead (56 percent).

This changes dramatically when we limit the sample to communes in which both groups are found. Then we find negligible difference due to characteristics, with disparities in living

[24] The decomposition is highly sensitive to the reference when the regressors are not observed for all groups.

standards being entirely attributable to different returns. This is true using either reference weights, and with and without geographical fixed effects. When we omit communes without minority households, this greatly compresses the variance in household characteristics. The positive component attributable to differences in characteristics in the whole sample, is entirely due to the advantageous characteristics of majority households in non-minority areas.

In order to get a sense of the extent of structural inequality within communes, we next set a reference household—where the reference is overall sample mean characteristics excluding location—common to all areas and both ethnic groups. We then predict, based on the regression coefficients allowing for commune fixed effects, what log per capita expenditures would be in each commune for each ethnic group if all characteristics were identical except for location and ethnicity. For each commune there are either one or two predicted values depending on whether both groups reside there. Two predicted values enables us to compare the groups within a commune controlling for household characteristics.

Figure 5 graphs predicted log per capita expenditures for the majority against the same for the minority for the communes where both groups reside. Thus, similarly to figure 4, each point represents one commune. The figure clearly shows that even when household characteristics including location are identical, minority households in Viet Nam have lower predicted living standards than majority households. This again underlines the finding that, although a large part of ethnic inequality controlling for differences in household characteristics can be attributed to geographical attributes, not all of it can.

Our results point to the importance of differing returns to economic characteristics. A less significant role is played by inter-group differences in household characteristics other than in where they live.

7. Conclusions

In principle, there are two possible approaches to redressing the ethnic inequality found in many developing countries. One approach assumes that the model generating the incomes of the better off group will work if only it is applied to the other group. The second approach assumes that the two models are fundamentally different, and that only by working with the actual model appropriate to the worse off group will the ethnic inequality be redressed. This paper tries to determine which approach is the right one in the case of Viet Nam.

The differences in levels of living in northern rural Viet Nam are due in part to the fact that the minorities live in less productive areas, with difficult terrain, poor infrastructure and lower accessibility to the market economy and off-farm work. There are large regional differences in living standards and considerable immobility, so that geographic disparities tend to be persistent.

But disparities in levels of living between the minority and majority are not just a matter of geography. We also find large differences within geographical areas, which persist even

after controlling for household characteristics. Interestingly, a non-geographic model of living standards actually hides the magnitude of these intra-locational disparities. This is because geographic characteristics matter more to the minorities *and* the geographic effects are correlated with their other characteristics. Living in areas with worse infrastructure, worse access to markets and so on, tends to be associated with less rewarding non-geographic household characteristics, and this effect is stronger for the minorities.

A model of living standards that allows for ethnic differences and geographic effects thus provides two main insights. First, a larger component of the variance in minority consumption is due to where a household lives. This holds even when focusing on the communes in which both groups are found. Second, allowing for geographic effects gives a very different picture of the structure of returns to given household characteristics—notably education and land. In this setting, there appears to be a severe bias in assessments of the role played by differences in returns to non-geographic characteristics in models that do not allow for geographic effects on living standards. We have argued that the most plausible explanation for this bias is that there is unobserved geographic heterogeneity in the quality of land and education. Our results are consistent with these omitted geographic differences in land quality being negatively correlated with land quantities. Education quality disparities on the other hand appear to be positively correlated with schooling quantities, though much more so for the minorities. The methods used here can deal with geographic endogeneity of characteristics, but there may also be latent within-commune differences in education quality, for example. We could then be overestimating returns to the majority relative to the minorities if the returns to quality are higher for the majority or if inter-household differences in education quantity within communes are more responsive to latent quality differences for the majority than minority households. There is no obvious reason why these conditions would hold, but they cannot be ruled out.

We find that, at given characteristics, there are systematic differences not attributable to where you live. Indeed, if we look solely at communes where both groups live, differences in characteristics no longer account for any of the difference in average consumption. These results lead us to conclude that fundamentally different models generate incomes for the majority and minority groups. This need not be the result of current discrimination; historical processes— possibly including a history of past discrimination—could well be the source.

However, it is not the case that minority groups obtain lower returns to all characteristics. The ethnic differences in returns are more complex than that. A rational response to the social or economic exclusion of an ethnic sub-group is to retreat into specific activities, or strive to obtain higher returns to certain characteristics that cannot be easily discriminated against. In a poor rural economy such as Viet Nam, opportunities for income reducing discrimination are largely confined to certain activities, notably the off-farm wage labor market. How hard you work your own land or what you cultivate are unlikely to be among the activities that can be discriminated against. Yet, of course, the returns to one's land depend heavily on own effort

and family labor endowments. A possible outcome then is that the disadvantaged ethnic group achieves higher returns in activities such as subsistence farming, gathering forest products and cultivation of non-traditional crops.

We find strong evidence for this effect in the marginal returns to land for the ethnic minorities. The component attributed to differences in returns in the decomposition is picking up other such "compensating effects." For example, the pure returns to location—even when in remote, inhospitable areas—tend also to be higher for the minorities. Such behavior improves their consumption levels, though it is not sufficient to overcome the large differential with the majority.

In reducing poverty among Viet Nam's minorities and reducing this dimension of inequality, there is an important role for geographically targeted programs aimed at poor areas. However, our results also suggest that it is not sufficient to only target interventions to poor areas, even with relatively high concentrations of ethnic minority groups. Policies for fighting poverty among the minorities that assume the Kinh model will continue to be ineffective. The paper's results clearly point to the need for specific interventions within geographically targeted poor area development programs to be appropriately tailored to, and narrowly focused on, the problems, needs, and situation of minority households. Only in this way can policy eventually succeed in raising minority household returns to given characteristics to the levels enjoyed by neighboring majority households.

Effective policies should also recognize the compensating behaviors we have identified, and other forms of behavioral responses on the part of the minorities. A history of lower returns to certain non-geographic characteristics has generated higher returns to land and location for the minority groups. This is inequality reducing though it may well reinforce ethnic differences in the longer term. The minorities have developed a comparative advantage in location but it is also location that makes them more remote, more difficult to integrate and costlier to reach with social services and physical infrastructure. In helping redress current inequalities it will be necessary to open up options for minority groups both by assuring that they are not disadvantaged in (for example) labor markets, and by breaking the conditions that have caused their isolation and social exclusion.

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Table 1: Descriptive Statistics

	Majority Sample		*Minority Sample*	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*
Per capita expenditure	1,246,575	682,291	930,051	450,077
Household size	4.68	1.94	5.55	2.43
Prop. of children 0 to 6	0.17	0.19	0.21	0.19
Prop. of members 7 to 16	0.21	0.21	0.23	0.20
Prop of male adults	0.27	0.17	0.27	0.15
Prop. of female adults	0.34	0.19	0.29	0.15
Single member household	0.03	0.18	0.01	0.09
Couple	0.05	0.21	0.02	0.14
Couple and child	0.10	0.30	0.08	0.27
Couple and two children	0.17	0.37	0.12	0.33
Couple and three or more children	0.32	0.47	0.38	0.49
Three generation household	0.18	0.39	0.24	0.43
Other household type	0.15	0.35	0.14	0.35
Age of household head	44.8	14.9	41.2	14.0
Male household head	0.76	0.43	0.87	0.34
Most educated person is illiterate/semi-literate	0.03	0.16	0.12	0.32
Most educated has 1-5 yrs primary	0.12	0.32	0.27	0.44
Most educated has 1-3 yrs middle school	0.17	0.37	0.18	0.39
Most educated has 1-4 yrs high school	0.53	0.50	0.31	0.46
Most educated has vocational education	0.12	0.33	0.11	0.31
Most educated has university education	0.03	0.17	0.01	0.11
Area of annual irrigated crop land (m^2)	1,749.5	1633.7	573.4	1218.3
Area of annual nonirrigated crop land (m^2)	1,128.7	3,210.3	4,172.6	4695.7
Area of perennial crop land (m^2)	309.8	1,268.2	582.2	1,228.6
Area of forest land (m^2)	175.7	1,540.4	1,297.2	3,933.5
Area of water surface land (m^2)	94.1	612.7	66.2	218.1
Area of other land (m^2)	155.9	1,659.1	995.4	3267.6
Prop of irrigated land of good quality	0.36	0.40	0.06	0.22
Prop of nonirrigated land of good quality	0.06	0.22	0.04	0.14
H'hold gets income from relatives abroad	0.03	0.16	0.01	0.10
Number of observations	2,254		466	

Source: The data are from the 1992–93 Viet Nam Living Standards Survey.

Table 2: Accessibility to Facilities By Ethnicity

	Majority ethnic groups		*Minority ethnic groups*	
	Mean	*St. dev*	*Mean*	*St.dev*
Market in the commune	0.53	0.50	0.13	0.34
Periodic market	0.15	0.36	0.36	0.48
Distance to closest market (km)	1.00	2.00	3.15	3.72
Public transport	0.48	0.50	0.56	0.50
Radio station	0.52	0.50	0.15	0.36
Health care clinic	0.96	0.19	0.84	0.37
Distance to closest hospital (km)	8.60	5.40	11.90	7.80
Lower secondary school	0.94	0.24	0.83	0.38
Distance to closest lower secondary school (km)	0.20	0.95	2.40	6.50
Upper secondary school	0.10	0.31	0.11	0.32
Distance to closest upper secondary school (km)	6.10	4.70	10.30	7.03
Distance to district center (km)	9.60	7.80	19.50	15.30
Distance to closest post office (km)	3.80	4.20	6.90	6.00
Unskilled labor employment is available	0.66	0.47	0.44	0.50
Commercial enterprise exists	0.49	0.50	0.26	0.44

Note: Unless noted, the table gives proportions of majority and minority households who live in communes with each facility or attribute. For example, 53 percent of majority group households reside in a commune that has a permanent market versus only 13 percent of ethnic minority households. The distance variables represent average kilometers from a household's commune center to the closest such facility.

Table 3: Determinants of Living Standards

					Commune Fixed Effects			
	Majority		*Minority*		*Majority*		*Minority*	
	Coef.	*t-ratio*	*Coef.*	*t-ratio*	*Coef.*	*t-ratio*	*Coef.*	*t-ratio*
Constant	13.12	92.0	12.73	43.15	13.35	97.64	12.49	32.68
Household size (log)	–0.27	4.66	–0.29	3.23	–0.33	6.89	–0.4	3.91
Prop. of members 7-16	0.48	6.32	0.25	1.84	0.37	5.49	0.25	2.21
Prop of male adults	0.78	7.19	0.85	3.89	0.60	6.75	0.60	3.33
Prop. of female adults	0.60	5.97	0.50	3.01	0.41	4.12	0.36	2.30
Single member household	–0.08	0.96	0.004	0.02	–0.14	1.89	–0.12	0.49
Couple and child	0.00	0.06	0.06	0.41	–0.11	2.26	0.04	0.42
Couple and two children	0.07	1.19	0.11	0.71	–0.05	0.84	0.04	0.27
Couple and three or more children	0.04	0.61	0.12	0.66	–0.09	1.44	0.01	0.07
Three generation household	0.04	0.56	0.09	0.64	–0.06	1.05	0.07	0.54
Other household type	0.02	0.30	0.13	0.80	–0.07	1.24	0.12	0.84
Age of head	0.01	2.47	0.005	0.41	0.01	3.17	0.01	1.06
Age of head squared	–0.00	2.49	–0.000	0.44	–1.2e-4	3.12	–1.6e-4	1.11
Male household head	0.01	0.40	0.01	0.10	0.02	0.69	0.06	1.15
Most educated: 1-5 yrs primary	0.20	2.57	0.56	5.33	0.17	2.36	0.19	3.53
Most educated: 1-3 yrs middle school	0.29	3.86	0.61	7.74	0.26	3.55	0.20	2.77
Most educated: 1-4 yrs high school	0.40	4.85	0.74	7.07	0.38	4.90	0.31	3.96
Most educated: vocational education	0.53	6.59	0.78	6.88	0.53	6.93	0.36	3.79
Most educated: university education	0.79	8.18	0.81	3.26	0.71	7.93	0.51	2.31
Irrigated land	–3.2e-5	1.40	1.3e-4	1.83	1.2e-5	0.71	2.0e-4	4.06
Irrigated land squared	4.0e-9	2.54	–8.9e-9	0.71	1.4e-9	1.34	–2.3e-8	3.09
Nonirrigated land	–4.8e-6	0.39	8.6e-6	0.50	8.6e-6	2.03	1.9e-5	0.83
Nonirrigated land squared	1.0e-10	0.74	–1.5e-10	0.28	–9.5e-11	2.00	–2.3e-10	0.30
Perennial crop land	3.8e-5	1.33	5.9e-5	1.34	1.5e-5	0.56	1.1e-4	1.94
Perennial crop land squared	3.0e-10	0.21	–3.0e-9	0.54	2.3e-10	0.18	–8.3e-9	1.31
Forest land	–1.4e-6	0.12	1.6e-5	0.96	1.9e-5	1.99	1.7e-5	0.96
Forest land squared	3.3e-11	0.13	–3.2e-10	0.63	–4.7e-10	2.27	–5.0e-10	0.98
Water surface land	8.4e-5	2.88	4.0e-4	2.92	1.1e-4	3.68	3.8e-4	2.62
Water surface land squared	–4.4e-9	2.42	–2.2e-7	2.08	–5.7e-9	2.94	–1.8e-7	1.66
Other land	–1.8e-5	1.01	3.2e-6	0.21	5.4e-6	0.56	2.5e-5	0.97
Other land squared	3.2e-10	1.25	1.1e-10	0.22	1.5e-11	0.11	–5.6e-10	0.64
Prop good quality irrigated land	0.004	0.08	–0.05	0.46	0.03	0.89	0.02	0.34
Prop good quality nonirrigated land	0.07	1.54	0.24	1.90	–0.01	0.25	0.20	2.74
Income from relatives abroad (yes/no)	0.35	4.57	0.34	3.49	0.27	5.40	0.24	4.82
Observations								
F	2,254		466		2,254		466	
Prob > F	(28,80) = 27.44		(24, 25) = 119.81		(32, 80)=6975.05		(19, 25) = 208.10	
R-squared	0.0000		0.0000		0.0000		0.0000	
Root MSE	0.25		0.46		0.48		0.61	
	.4007		.3833		.3398		.3346	

Note: the regression omits the proportion of members aged 0–6; households that consist of a couple; illiterate education status. We leave out the commune fixed effects for ease of presentation. t-ratios are estimated using the robust cluster option in STATA 6.0 (1999)

Table 4: Decomposing Sources of Ethnic Inequality

			Source of difference in log mean consumption	
	Reference	*Difference in log consumption per capita*	*Different characteristics*	*Different returns to characteristics*
Whole sample				
Commune effects?				
No	majority	.2967	.1532	.1433
No	minority	.2967	.1666	.1300
Common communes only				
Commune effects?				
No	majority	.2498	–.0086	.2582
No	minority	.2498	.0493	.2004
Yes	majority	.2498	.0081	.2417
Yes	minority	.2498	–.0536	.3034

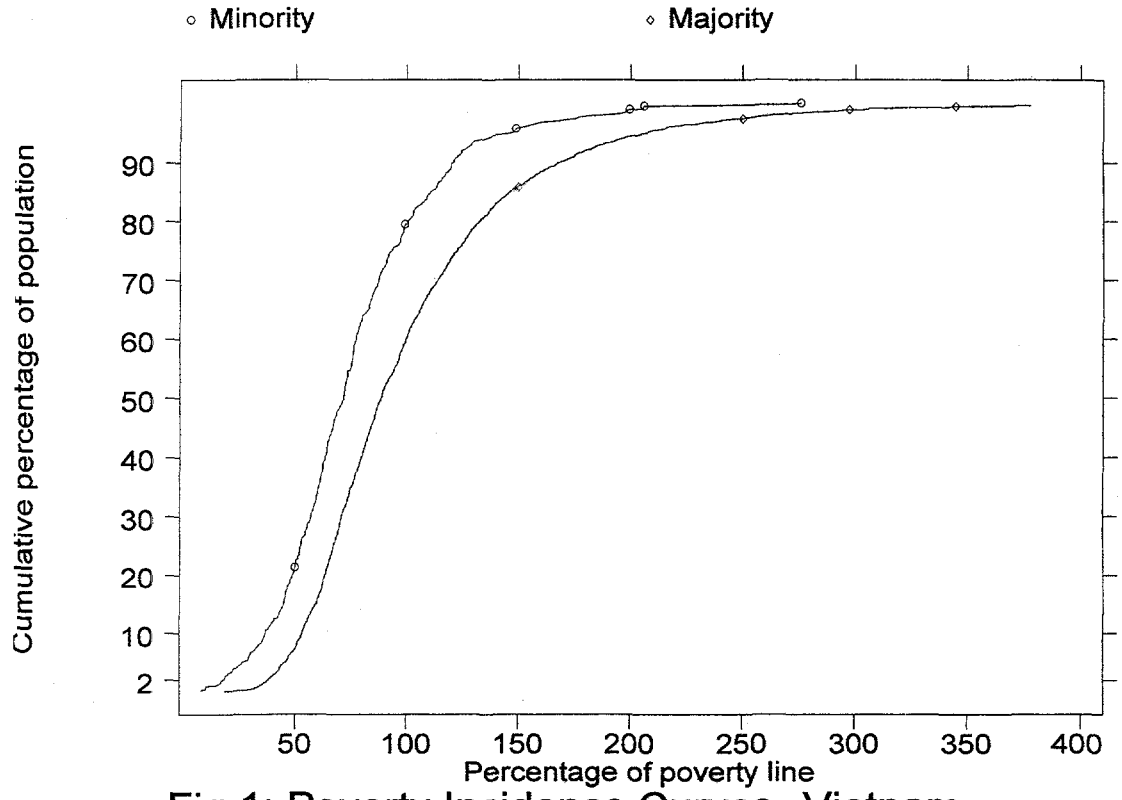
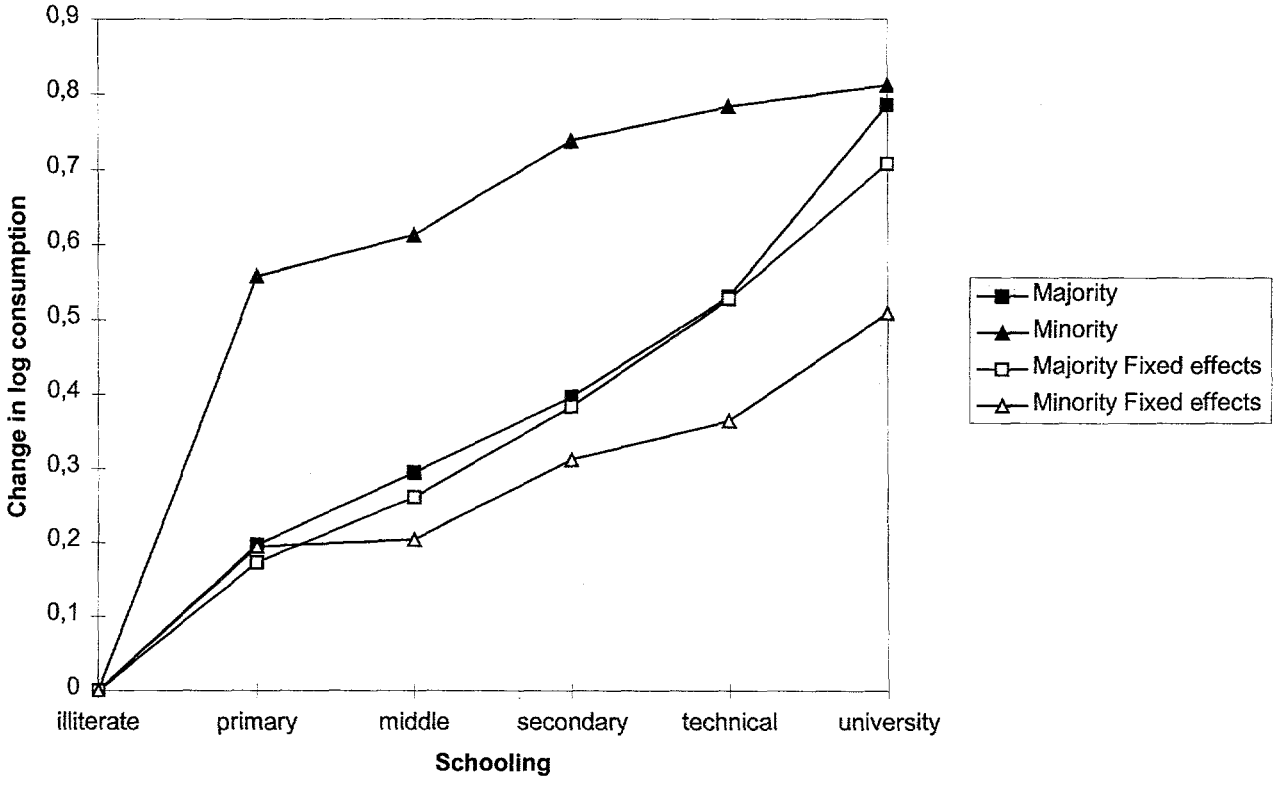


Fig 1: Poverty Incidence Curves--Vietnam

Figure 2: Returns to education by ethnicity



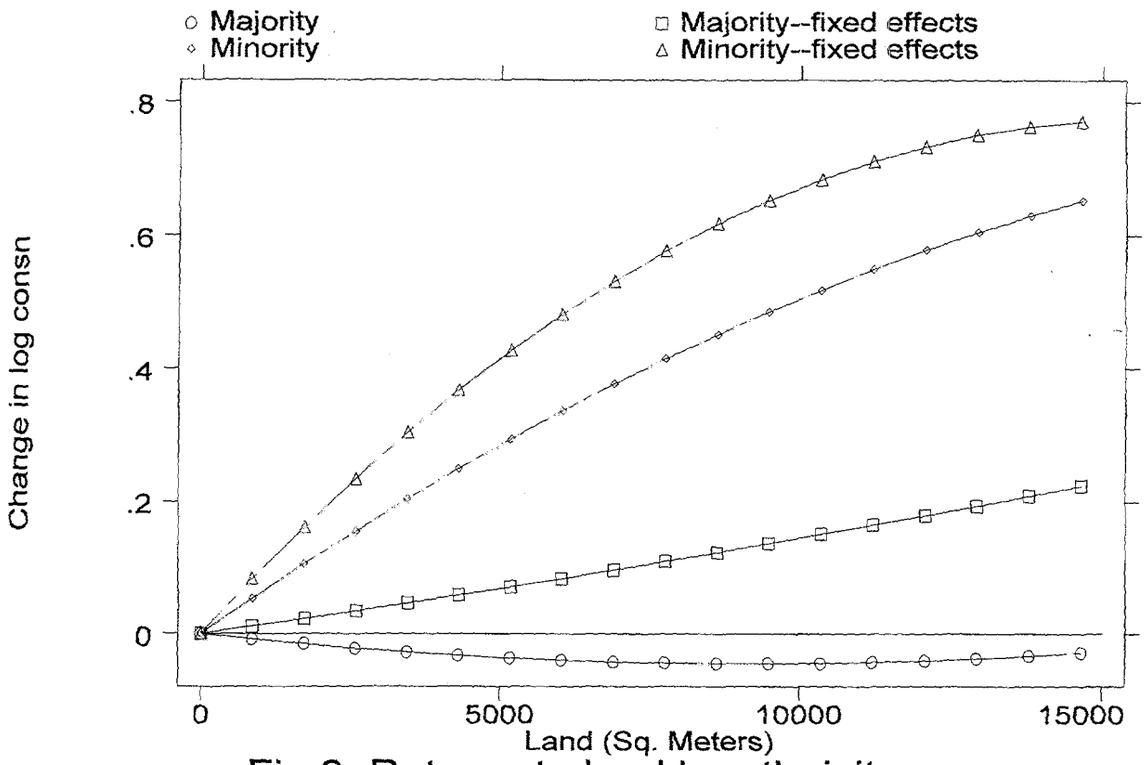


Fig 3: Returns to land by ethnicity

Figure 4: Returns to location by ethnicity

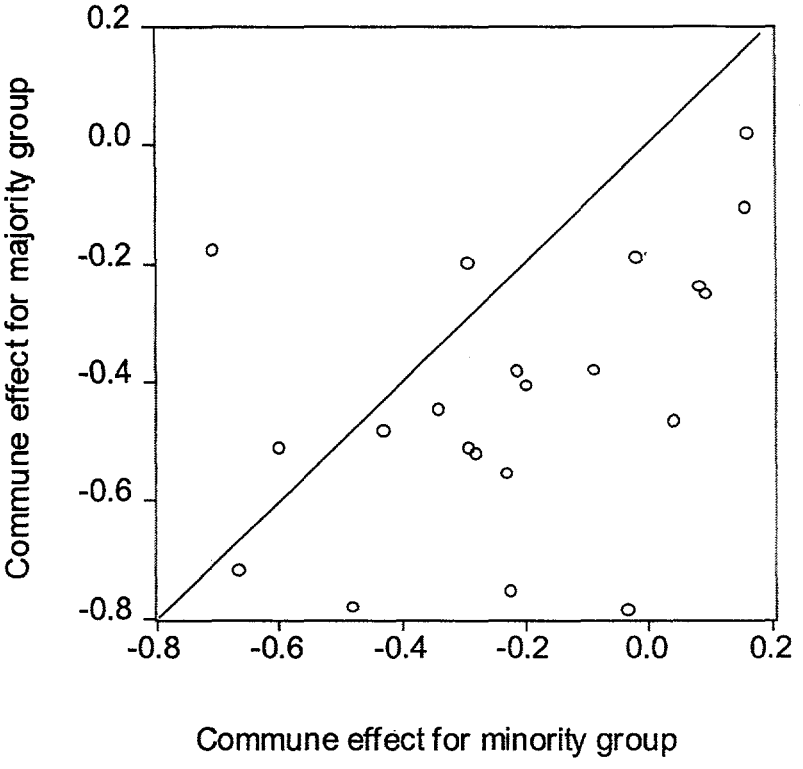
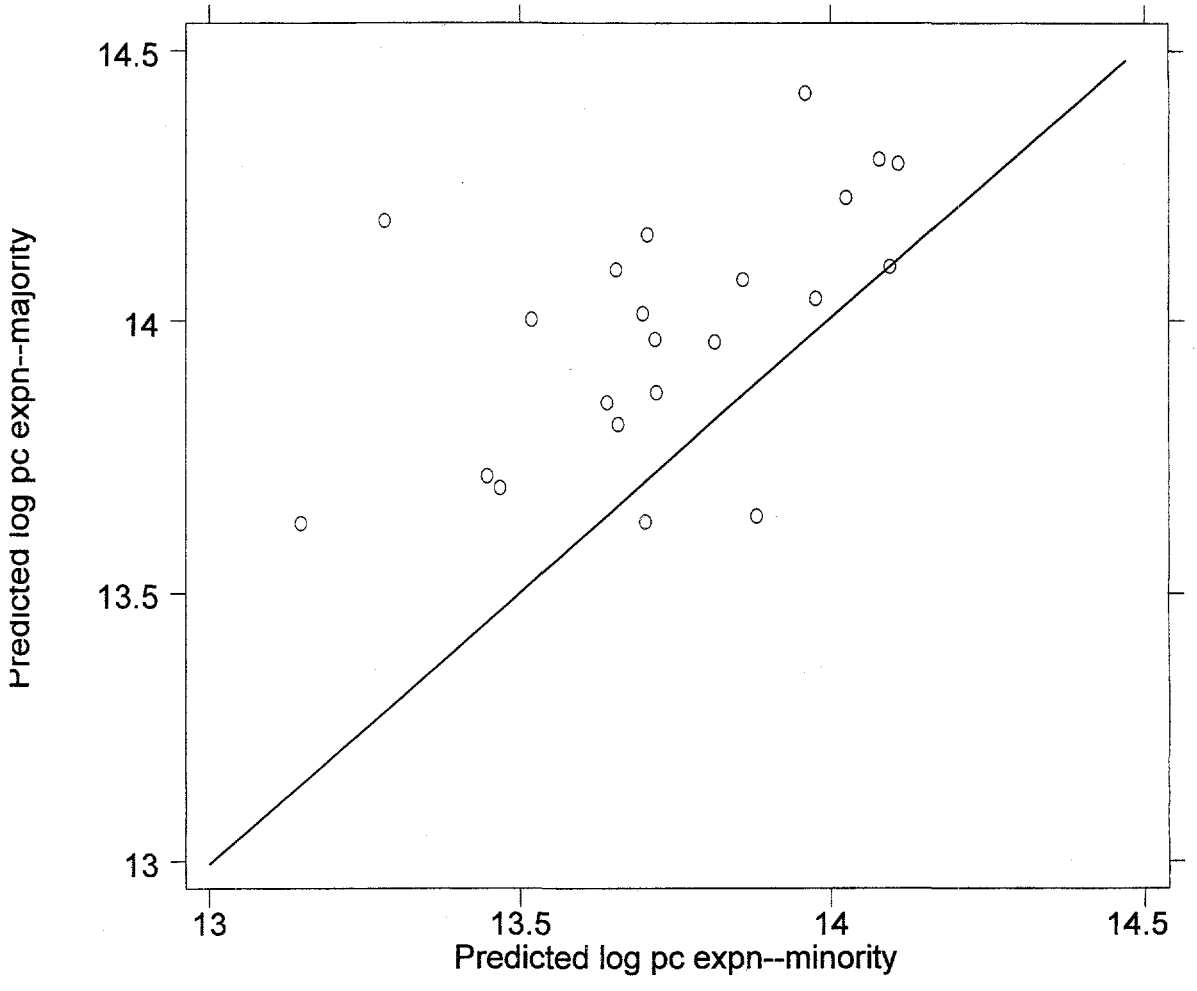


Figure 5: Predicted Consumption by Ethnicity and Location at Given Household Characteristics



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